

Establishment of Enrekang Botanic Garden, South Sulawesi: an effort to conserve plant diversity in the Wallacea region

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ABSTRACT. The Enrekang Botanic Garden is newly established in Kabupaten Enrekang, South Sulawesi, Indonesia, to document and conserve the diversity of plants from the Wallacea Region. The new botanic garden is a collaborative venture since 2005, in which Kebun Raya Bogor is assisting the local authorities of Sulawesi Selatan to form a development plan and establish the garden's living collections. The garden has developed nursery facilities, an irrigation system, and road access. A total of 4601 living plants have been planted, representing 36 families, 156 genera and 232 species.

Keywords. Enrekang Botanic Garden, Indonesia, plant diversity, Sulawesi, Wallacea

Establishment of new botanic gardens in Indonesia

The establishment of new botanic gardens in Indonesia is in line with Article 9 of the Convention on Biological Diversity, on *Ex Situ* Conservation (CBD 1993): "establish and maintain facilities for *ex situ* conservation of and research on plants, animals and micro-organism, preferably in the country of origin of genetic resources"; and Target 8 of the Global Strategy for Plant Conservation (GSPC 2002): "sixty per cent of threatened plant species in accessible *ex situ* collections preferably in the country of origin, and ten per cent of them included in recovery and restoration programmes".

Indonesia has committed to international conventions such as the CBD (1993), Agenda 21 in 1992 (United Nations 2009) and GSPC (2002), and as part of this commitment has been establishing new botanic gardens as *ex situ* conservation sites. This activity was also included in Agenda 21 Indonesia (United Nations Development Programme & Indonesia Kantor Menteri Negara Lingkungan Hidup 1997). The establishment of new botanic gardens in every province in Indonesia will benefit not only the local community, but also represent national and international needs; for example, the conservation of plant species, soil and water by a botanic garden will not only benefit the local community but also a much wider area (Sutrisno 2010). A botanic garden also serves to inspire a wider community to respect plants and their wise use.

The establishment of new botanic gardens in Indonesia was initiated by the then Indonesian President, Megawati Sukarno Putri, during "Hari Kebangkitan

Teknologi Nasional” (the National Technology Awareness Day) on 11 August 2004, when she emphasised the importance of establishing a botanic garden in every province in Indonesia. The Minister of Research and Technology followed up on the President’s speech by issuing a letter to all Governors in Indonesia (Surat Edaran Menteri Riset dan Teknologi kepada seluruh Gubernur di Indonesia No. 77/M/VIII/2004). The Minister suggested the Governors establish at least one botanic garden in each province, and to collaborate with the Indonesian Institute of Sciences (LIPI) to undertake the task. As a result, many proposals were sent to LIPI to establish botanic gardens. Consequently, from 2004 until the end of 2009, 16 Local Authorities had started to establish new botanic gardens. One of them is Enrekang (Fig. 1).



Fig. 1. Location of new botanic gardens (white circles) and the four long-established botanic gardens of Kebun Raya Indonesia (black squares) in Indonesia. (After Sutrisno 2010)

Wallacea

The Wallacea region is one of the world’s biodiversity hotspots situated east of the Wallace line—an imaginary line dividing Indonesia into two floristic regions: an Asian floristic region to the west and an Australian floristic region to the east. Wallacea is somewhat transitional between the two flora regions, and contains floristic elements from both regions. The area covers the islands of Sulawesi, Lombok, Lesser Sunda (including Timor Leste) and the Moluccas (see Fig. 2).

Wallacea has a high extent of floral and faunal endemism, although in general, information on the flora from the region is still lacking. However, it is estimated that c. 10,000 species of vascular plant grow in the region, of which 1500 species (15%) are endemic (Conservation International 2007).

Sulawesi is the largest island in the region, covering about 53% of the area, with c. 500 endemic species of plants. Although many new species have been discovered from the island since several decades past, the island’s plant diversity is still poorly known as the number of specimens collected per 100 km² is still quite low, i.e., 23, whereas, ideally, an adequate representative of collections would be 100



Fig. 2. The Wallacea region: a transition zone from Australia to Asia.

specimens per 100 km² (Whitten et al. 2002). Moreover, this plant diversity needs to be represented in *ex situ* living collections in botanic gardens.

Sulawesi's plant diversity is facing serious threats, as also happens in the region generally, due to habitat loss, deforestation, plantation development and farming. The establishment of a new botanic in Kabupaten Enrekang, South Sulawesi, is therefore timely. The new garden is named Kebun Raya Enrekang.

Establishment of Kebun Raya Enrekang

In August-September 2005, the Local Authorities of Enrekang in collaboration with Kebun Raya Bogor (KRB) and The National Survey and Mapping Coordination Agency (Bakosurtanal) surveyed and mapped some prospective localities as potential sites for the new Kebun Raya Enrekang (KRE). Following the survey, an MoU was signed by LIPI and the Enrekang Local Authority for the establishment of KRE. At the same time, a master plan of the new garden was completed (PT. Tata Guna Patria 2006). In April 2006 a team from KRB worked together with some local staff to clear the site and started a nursery. A year later, some of the plant collections were officially planted in the garden on 14 March 2007 by VIPs from both Enrekang and LIPI. This first planting is regarded as the establishment date of the new garden.

KRE is located on the main Trans Sulawesi road between Makassar and Tana Toraja. It is situated at the Batu Mila Village, Kecamatan Meiwa, Kabupaten

Enrekang, Province of Sulawesi Selatan (3°33'47.58"S 119°45'40.56"E). Covering 300 ha in area with an elevation range of 70–155 m asl, the new garden is administered by the local authority Dinas Kehutanan dan Perkebunan. Since the development of KRE in 2006, the number of plant collections (excluding the nursery's collection and orchids) is 4601 accessions, comprising 36 families, 156 genera and 232 species; some of which are listed in Table 1. The new garden has 18 employees, six of whom have attended a training course on managing botanic gardens at the Kebun Raya Bogor. There is a building that functions as a temporary management office as well as a short-term accommodation for employees, a 3-km road access, nursery facilities including awning and shading, and an irrigation system, fencing around the garden that also keeps free-ranging cattle out, a motorbike, and two gazebos built by teams from KRB.

Table 1. Some plants already established in the KRE living collections.

Plant name	Family
<i>Aleurites moluccana</i> (L.) Willd.	Euphorbiaceae
<i>Borassus flabellifer</i> L.	Arecaceae
<i>Cinnamomum celebicum</i> Miq.	Lauraceae
<i>Cyrtostachys microcarpa</i> Burret	Arecaceae
<i>Diospyros blancoi</i> A.DC.	Ebenaceae
<i>Diospyros celebica</i> Bakh.	Ebenaceae
<i>Eucalyptus deglupta</i> Blume	Myrtaceae
<i>Minusops elengi</i> L.	Sapotaceae
<i>Myristica lancifolia</i> Poir.	Myristicaceae
<i>Neonamecia celebica</i> Merr.	Rubiaceae
<i>Pangium edule</i> Reinw.	Achariaceae
<i>Parkia timoriana</i> Merr.	Fabaceae
<i>Pigafetta elata</i> (Mart.) H.Wendl.	Arecaceae
<i>Pterospermum celebicum</i> Miq.	Malvaceae
<i>Sandoricum borneense</i> Miq.	Meliaceae
<i>Sapindus rarak</i> DC.	Sapindaceae
<i>Schleichera oleosa</i> (Lour.) Oken	Sapindaceae
<i>Syzygium malaccense</i> (L.) Merr. & L.M.Perry	Myrtaceae
<i>Syzygium zeylanicum</i> (L.) DC.	Myrtaceae
<i>Timonius stipulosus</i> Valetton	Rubiaceae
<i>Vatica pauciflora</i> Blume	Dipterocarpaceae
<i>Vitex cofassus</i> Reinw. ex Blume	Lamiaceae

KRE focuses on collecting plant species native to Wallacea. Some examples include the palms *Pigafetta* and *Borassus flabellifer*, the tree genus *Agathis*, the gum tree *Eucalyptus deglupta*, the rosewood *Pterocarpus indicus* and the fragrant sandalwood *Santalum album*. The collecting sites have so far included the forests surrounding Enrekang to start with. Also, seeds have been brought from Kebun Raya Bogor.

There are some themed displays and other features to be built at KRE (see Master Plan in Fig. 3), namely, Taman Wangi (aromatic plant collections), Formal Garden, Amphitheatre, Landscaped Corridor, Herb Garden, Aquatic Plant Collections, Taman Mexico (succulent collections), Orchidarium, Pandan Garden, Palm Garden and Flower Park.

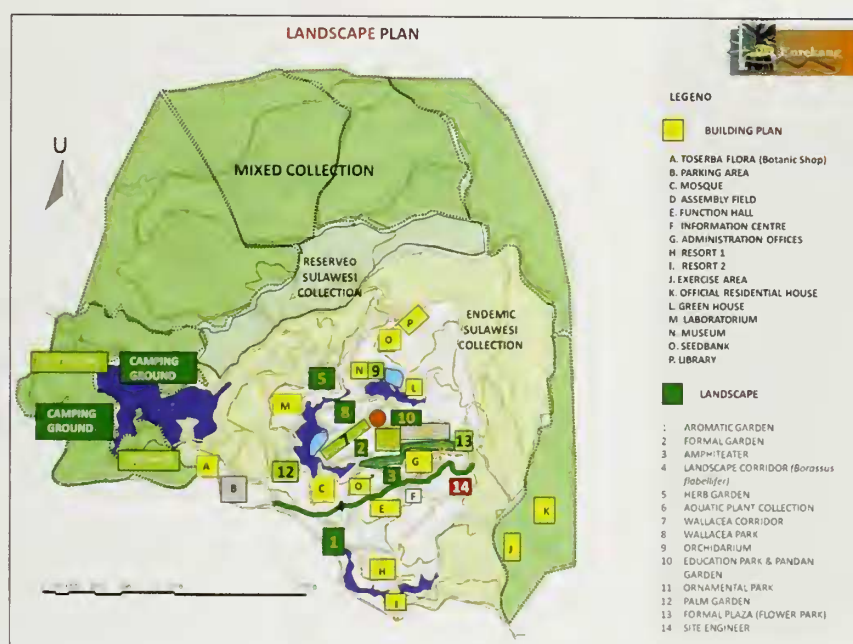


Fig. 3. Landscape plan of Kebun Raya Enrekang (taken from the Master Plan of Kebun Raya Enrekang, PT. Tata Guna Patria 2006).

Closing remarks

Establishment of a new botanic garden in each province of the vast Indonesian Archipelago is crucial as forests become more degraded and pressures to natural habitats increase due to the country's high population. The establishment of Kebun Raya Enrekang plays an important role in the conservation of plant diversity, particularly in Wallacea.

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